National Institute of Environmental Health Sciences

Global warming and environmental contaminants in aquatic organisms: The need of the etho-toxicology approach

Author(s): Manciocco A, Calamandrei G, Alleva E
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Abstract:

Environmental contaminants are associated with a wide spectrum of pathological effects. Temperature increase affects ambient distribution and toxicity of these chemicals in the water environment, representing a potentially emerging problem for aquatic species with short-, medium- and long-term repercussions on human health through the food chain. We assessed peer-reviewed literature, including primary studies, review articles and organizational reports available. We focused on studies concerning toxicity of environmental pollutants within a global warming scenario. Existing knowledge on the effects that the increase of water temperature in a contaminated situation has on physiological mechanisms of aquatic organisms is presented. Altogether we consider the potential consequences for the human beings due to fish and shellfish consumption. Finally, we propose an etho-toxicological approach to study the effects of toxicants in conditions of thermal increase, using aquatic organisms as experimental models under laboratory controlled conditions.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Researcher

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Quality, Food/Water Quality, Meteorological Factors, Temperature, Other Exposure

Food/Water Quality: Biotoxin/Algal Bloom, Chemical, Chemical, Chemical, Other Water Quality Issue

Water Quality (other): Water temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cancer, Developmental Effect, Diabetes/Obesity

Developmental Effect: Cognitive/Neurological

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Pregnant Women

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified